

SLOVENSKI STANDARD

SIST EN 60249-2-4:1997/A3:1997

01-avgust-1997

**Base materials for printed circuits - Part 2: Specifications - Specification No.4:
Epoxide woven glass fabric copper-clad laminated sheet - General purpose grade
(IEC 249-2-4:1987/A3:1993) - Amendment 3**

Base materials for printed circuits -- Part 2: Specifications -- Specification No. 4: Epoxide woven glass fabric copper-clad laminated sheet, general purpose grade

Basismaterialien für gedruckte Schaltungen -- Teil 2: Einzelbestimmungen -- Einzelbestimmung Nr. 4: Kupferkaschierte Epoxidharz-Glashartgewebetafeln für allgemeine Anwendungszwecke (standards.iteh.ai)

Matériaux de base pour circuits imprimés -- Partie 2: Specifications -- Spécification n° 4: Feuille de tissu de verre époxyde recouverte de cuivre, de qualité courante

Ta slovenski standard je istoveten z: EN 60249-2-4:1994/A3:1994

ICS:

31.180 Tiskana vezja (TIV) in tiskane Printed circuits and boards
plošče

SIST EN 60249-2-4:1997/A3:1997 en

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EUROPEAN STANDARD

EN 60249-2-4/A3

NORME EUROPEENNE

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February 1994

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Descriptors: Printed circuit, composite materials, glass, copper

Amendment A3 to the English version of EN 60249-2-4

Base materials for printed circuits

Part 2: Specifications

Specification No. 4: Epoxide woven glass fabric
copper-clad laminated sheet, general purpose grade
(IEC 249-2-4:1987/A3:1993)Matériaux de base pour circuits
imprimés

Partie 2: Spécifications

Spécification n° 4: Feuille de
tissu de verre époxyde
recouverte de cuivre, de qualité
couranteBasismaterialien für gedruckte
Schaltungen

Teil 2: Einzelbestimmungen

Einzelbestimmung Nr. 4:

Kupferkaschierte

Epoxidharz-Glashartgewebetafeln
für allgemeine

Anwendungszwecke

(CEI 249-2-4:1987/A3:1993)

(IEC 249-2-4:1987/A3:1993)

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This amendment A3 modifies the European Standard EN 60249-2-4:1994. It was approved by CENELEC on 1993-12-08. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

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EN 60249-2-4:1994/A3:1994

FOREWORD

At the request of the 76th Technical Board of CENELEC, amendment 3:1993 to the International Standard IEC 249-2-4:1987 was submitted to the CENELEC members for formal vote.

The text of the International Standard was approved by CENELEC as amendment A3 to EN 60249-2-4 on 8 December 1993.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1995-03-15
- latest date of withdrawal of
conflicting national standards (dow) 1995-03-15

ENDORSEMENT NOTICE

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The text of amendment 3:1993 to the International Standard IEC 249-2-4:1987 was approved by CENELEC as an amendment to the European Standard without any modification.

[SIST EN 60249-2-4:1997/A3:1997](https://standards.iteh.ai/catalog/standards/sist/bf68828c-221d-40aa-8998-5b268944a643/sist-en-60249-2-4-1997-a3-1997)

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
249-2-4

1987

AMENDEMENT 3
AMENDMENT 3

1993-05

Comprenant les amendements 1 (1989) et 2 (1992)
Incorporating Amendments 1 (1989) and 2 (1992)

Amendement 3

Matériaux de base pour circuits imprimés

Partie 2: Spécifications

Spécification n° 4: Feuille de tissu de verre époxyde
recouverte de cuivre, de qualité courante

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Amendment 3

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Base materials for printed circuits

Part 2: Specifications

Specification No. 4: Epoxide woven glass fabric
copper-clad laminated sheet, general purpose grade

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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FOREWORD

This amendment has been prepared by IEC technical committee 52: Printed circuits.

The text of this amendment is based on the following documents:

Amendments	Six Months' Rule/DIS	Reports on Voting
3	52(CO)378 52(CO)379 52(CO)380 52(CO)391	52(CO)387 52(CO)388 52(CO)389 52(CO)395
2	52(CO)362	52(CO)373
1	52(CO)319	52(CO)330

Full information on the voting for the approval of this amendment can be found in the reports on voting indicated in the above table.

The text of amendment 3 is indicated by a vertical line in the margin.

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4 Electrical properties

Replace, in table I, the present property designation by:

Surface resistance after damp heat while in the humidity chamber (optional)

Surface resistance after damp heat and recovery

Volume resistivity after damp heat while in the humidity chamber (optional)

Volume resistivity after damp heat and recovery

Page 17, Table VI

Replace table VI as follows:

Property	Test method (subclause of IEC 249-1)	Requirement		
Pull-off strength	3.5	Not less than 60 N (13,4 lbf)		
		Thickness of the copper foil		
		18 μm*	35 μm*	70 μm* and 105 μm*
Peel strength after heat shock of 20 s	3.6.2.1 or 3.6.2.2 or 3.6.2.3	Not less than 1,1 N/mm (6,3 lbf/in)	Not less than 1,4 N/mm (8,0 lbf/in)	Not less than 1,8 N/mm (10,3 lbf/in)
		No blistering nor delamination		
Peel strength after dry heat at 125 °C	3.6.3	Not less than 1,1 N/mm (6,3 lbf/in)	Not less than 1,4 N/mm (8,0 lbf/in)	Not less than 1,8 N/mm (10,3 lbf/in)
		No blistering nor delamination		
Peel strength after exposure to solvent vapour. Solvents as agreed upon between purchaser and supplier	3.6.4	Not less than 1,1 N/mm (6,3 lbf/in)	Not less than 1,4 N/mm (8,0 lbf/in)	Not less than 1,8 N/mm (10,3 lbf/in)
		No blistering nor delamination		
Peel strength after simulated plating	3.6.5	Not less than 0,9 N/mm (5,1 lbf/in)	Not less than 1,1 N/mm (6,3 lbf/in)	Not less than 1,4 N/mm (8,0 lbf/in)
Peel strength at high temperature Temperature 260 °C (optional)	3.6.7	Not less than 0,06 N/mm (0,34 lbf/in)	Not less than 0,075 N/mm (0,43 lbf/in)	Not less than 0,09 N/mm (0,51 lbf/in)
Temperature 125 °C (optional)		Not less than 0,7 N/mm (4,0 lbf/in)	Not less than 0,9 N/mm (5,1 lbf/in)	Not less than 1,1 N/mm (6,3 lbf/in)
Blistering after 20 s heat shock	3.7.2.1 or 3.7.2.2 or 3.7.2.3	No blistering nor delamination		
* 18 μm (152 g/m ² , 0,5 oz/ft ²); 35 μm (305 g/m ² , 1 oz/ft ²); 70 μm (610 g/m ² , 2 oz/ft ²); 105 μm (915 g/m ² , 3 oz/ft ²)				
NOTE - In case of difficulties due to breaking of foil or reading range of the force measuring device, the measurement of the peel strength at high temperature may be carried out using conductor widths larger than 3 mm.				

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5.6 Solderability

Delete the title and text of this subclause.

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5.7 Dimensional

Replace the present table VIII by the following new table VIII:

Table VIII

Property	Test method (subclause of IEC 249-1)	Requirement
Dimensional stability	3.11 $T = (150 \pm 2) ^\circ\text{C}$	0,5 mm/m max.

Add, after subclause 5.7, the following new subclauses:

5.8 Size tolerances**5.8.1 Size tolerances for sheets**

The size of the sheets as delivered by the supplier shall not deviate from the nominal size by more than $+10_0$ mm.

5.8.2 Size tolerances for cut panels

For panels cut to size according to the purchaser's specification, the following tolerances for length and width shall apply.

Panel size (mm)	Tolerance ± (mm)	
	Normal	Close
Up to 300	2	0,5
Over 300 to 600		0,8
Over 600		1,6
NOTE - The specified tolerances include all deviations caused by cutting the panels.		